



Technical Data Sheet

DOWSIL™ 3 Additive

Silanol functional silicone resin for dispersion of inorganic pigment to prevent flooding and floating

Features & Benefits

- Prevents flooding and floating
- Can be used in pastels and grays
- Highly effective at low concentrations
- Multi functional - also improves leveling
- Can be added in pigment grind or during let-down
- Low viscosity
- Low contribution to VOC at the recommended use levels (typically < 0.01 g/l)
- Improves color consistency
- Can be used in multiple coatings formulations
- Good cost-in-use versus competition
- Simplified formulation; additional leveling additive may not be required
- Flexibility in formulating
- Easy to incorporate
- Little consideration to VOC required during formulation

Composition

- Silicone resin with silanol functionality
- Supplied at 10 percent solids in toluene

Applications

DOWSIL™ 3 Additive has been tested successfully in the following applications:

- Solvent based wood coating
- Solvent based industrial coating

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Property	Unit	Result
Solids	Percent	10
Specific Gravity at 25°C (77°F)		0.9
Flash Point, Closed Cup	°C (°F)	4 (39)
Viscosity at 25°C (77°F)	cs	0.7–1.4

UNRESTRICTED – May be shared with anyone

®™ Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

DOWSIL™ 3 Additive

© 2017 The Dow Chemical Company. All rights reserved.

Description	<p>Most pigmented coating systems contain more than one pigment type. Flooding and floating occurs when multiple pigments separate from one another and are no longer homogeneously distributed.</p> <p>DOWSIL 3 Additive most effectively prevents the occurrence of flooding and floating when used as a pigment dispersant in the titanium dioxide white base paint. It is also effective as an anti-floating agent when post-added.</p> <p>A multifunctional additive, DOWSIL 3 Additive also improves leveling so that often no additional silicone leveling agent is necessary in the final formulation.</p>
How To Use	<p>To prevent the titanium dioxide flooding and floating in combination with colored pigments, DOWSIL 3 Additive can be used as the sole dispersant for titanium dioxide in the white base paint. The color pigment concentrate can then be added during the let-down stage. The recommended dosage of DOWSIL 3 Additive is 2–10 weight percent of the titanium dioxide used. In a paint containing 10 percent TiO₂ by weight in the total formulation, this equates to 0.2–1 weight percent DOWSIL 3 Additive in the total formulation.</p> <p>DOWSIL 3 Additive can be used as a co-dispersant along with other wetting and dispersing additives during “co-grind” of titanium dioxide. It is effective at concentrations ranging from 0.05–0.5 weight percent, based on the total formulation.</p> <p>Although most effective in the grind stage, DOWSIL 3 Additive can also be post-added at concentrations from 0.03–0.5 weight percent based on total formulation.</p> <p>The amount required is formulation dependent. Characteristics may vary when used with different systems and formulations. Thorough preproduction testing is necessary to ensure expected performance. DOWSIL 3 Additive is compatible with epoxy, polyurethane, polyester, alkyd and acrylic binder systems.</p>
Performance	<p>Flooding and Floating Prevention DOWSIL 3 Additive is very effective in preventing the flooding and floating of titanium dioxide in combination with black pigment. Figure 1 shows the in-can observation and rub-out test results in a gray 2K solvent borne polyurethane wood coating. Homogenous and high-quality coating films are found with DOWSIL 3 Additive. Identical results were obtained in titanium dioxide/blue pigment combination coatings.</p> <p>High Efficiency and Low Cost-In-Use in Grinding DOWSIL 3 Additive is highly effective even at very low dosage levels (Figure 2). DOWSIL 3 Additive performs more effectively at preventing flooding and floating than competitive materials, but at less than half the addition level.</p> <p>Effective in Post-Addition DOWSIL 3 Additive can be used post-add to improve flooding and floating beyond traditional dispersants on the market today. In Figure 3, adding Competitor 1 alone in the grind phase is ineffective in preventing flooding and floating. By additionally post-adding DOWSIL 3 Additive at levels as low as 0.03 percent weight in the total formulation, we can improve the floating and flooding effectively compared to the control (which has no post-addition) and versus post-adding Competitor 2.</p>

Performance
(Cont.)

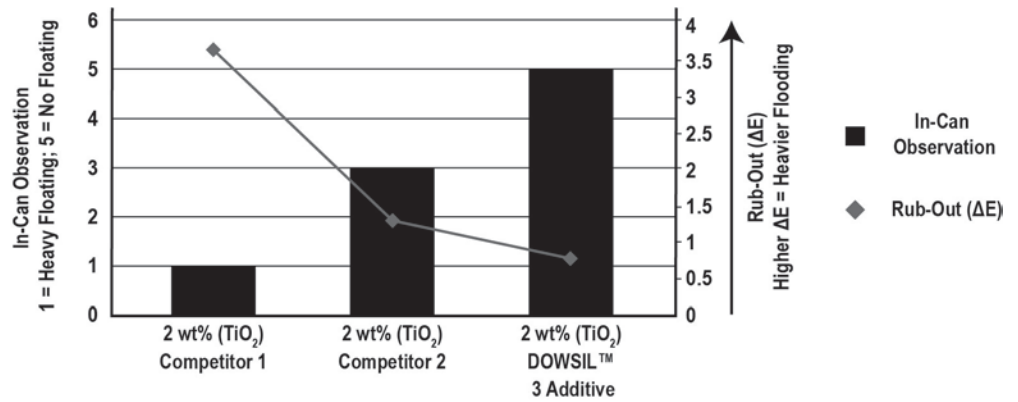


Figure 1: Floating (in-can observation) and flooding (rub-out results) with DOWSIL 3 Additive versus competitor dispersants in a solvent based 2K PU gray wood coating. All additives added during grinding of base white coating.

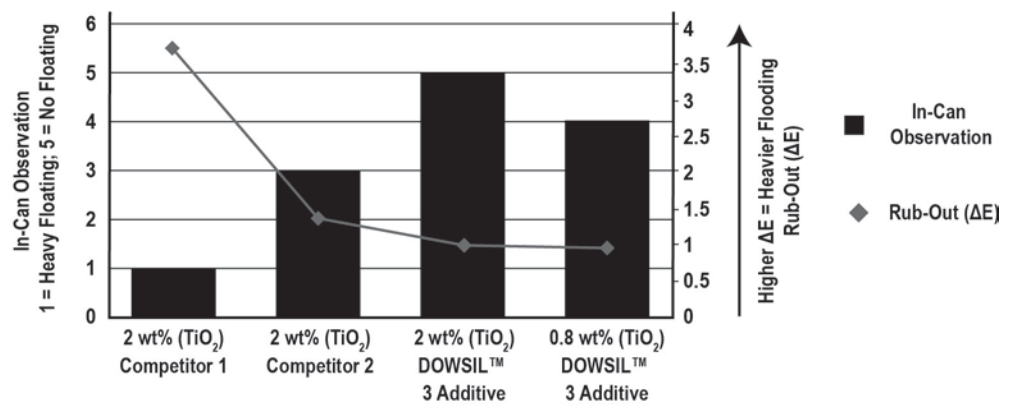


Figure 2: Floating (in-can observation) and flooding (rub-out results) in a solvent based 2K PU gray wood coating. DOWSIL 3 Additive is compared to competitor dispersants at lower addition levels in grind.

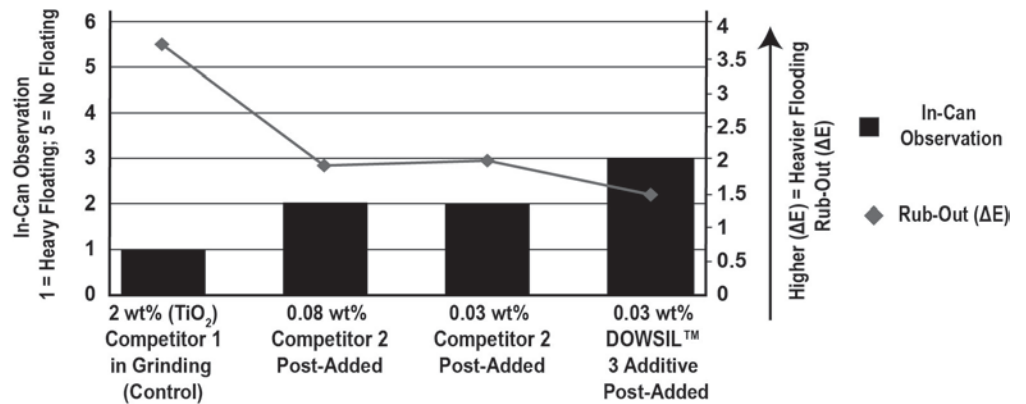


Figure 3: Floating (in-can observation) and flooding (rub-out results) in a solvent based 2K PU gray wood coating. Improvements are demonstrated by post-adding DOWSIL 3 Additive and Competitor 2 at addition levels indicated.

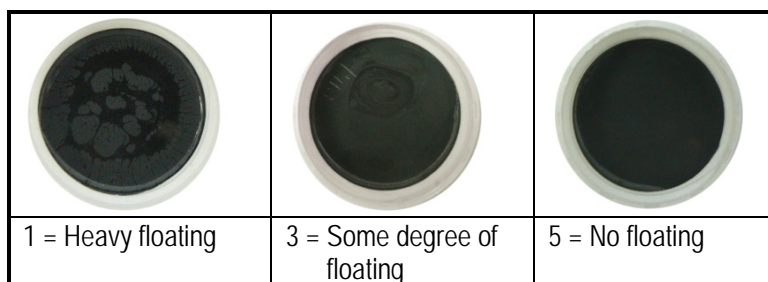
Performance Data

Competitor products:

- Competitor 1 is a 50 percent actives organic wetting and dispersing additive (modified polyurethane; 50 percent actives)
- Competitor 2 is a 50 percent actives organic wetting and dispersing additive (unsaturated polycarboxylic acid polymer) + a polysiloxane copolymer

Testing methods:

- In-can observation
 - Pour the well mixed paint in a can; leave for 30 min. and observe the pigment floating
 - Rating scale as below:



- Rub-out
 - Draw down the well-mixed paint on LENETA chart by 100- μ m wire rod
 - Rub the freshly applied film by finger
 - Test the color difference (ΔE) between the rubbed surface and unrubbed surface; lower ΔE indicates less color difference and less floating

Handling Precautions

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT WWW.CONSUMER.DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

Usable Life And Storage

When stored at or below 30°C (86°F) and above 0°C (32°F), DOWSIL 3 Additive has a shelf life of 36 months from date of manufacture. Refer to product packaging for "Use By" date.

Packaging Information

DOWSIL 3 Additive is available in 4 oz (113 g) samples; 35 lb (15.8 kg) pails and 400 lb (181.4 kg) drums.

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses. Not for human injection.

UNRESTRICTED – May be shared with anyone

®™ Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

DOWSIL™ 3 Additive

© 2017 The Dow Chemical Company. All rights reserved.

Health And Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, www.consumer.dow.com or consult your local Dow representative.

<http://www.consumer.dow.com>

LIMITED WARRANTY INFORMATION – PLEASE READ CAREFULLY

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that our products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

Dow's sole warranty is that our products will meet the sales specifications in effect at the time of shipment.

Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, DOW SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.

DOW DISCLAIMS LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

